Bag with Lateral Folds

The invention relates to a bag having lateral folds, which bag is made of flexible multi-layer film whose inner layer is fusible, in a configuration according to the preamble of claim 1.

In a known bag of this type (DE 20017182 U1) the halves of the lateral folds are connected at their exterior along the upper edges in order to provide a sealing action that is additionally improved by folding over the end areas and by securing the folded-over end areas to the neighboring gusset half.

The invention concerns the problem of a further improvement of the sealing action of the gussets at their upper ends. The invention solves this problem by a gusseted bag having the features of claim 1. With regard to further embodiments, reference is being had to claims 2 to 4.

Embedding the upper edges in a fused connecting area after folding over the upper end areas of the lateral folds ensures that a complete and safe sealing action of the gussets at the upper end is present even when no special closure, be it by fusing or by an adhesive, is provided along the upper edges of the lateral folds. This is so because the fused connecting area forms a complete seal that, independent of additional measures, provides a reliable closure of the gussets at their upper edges. At the same time, by connecting the gusset areas to the bag wall, preferably the rear bag wall, it is ensured that the upper ends of the gussets no longer project in a disturbing way into the filling space.

Further details and effects result from the following description and the drawing in which two embodiments of the subject matter of the invention are schematically shown in more detail. The drawings show in:

Fig. 1 a broken-away view of the upper end area of a bag according to the

invention,

Fig. 2 a section approximately along the section line II-II of Fig. 1,

Fig. 3 a view similar to Fig. 1 of a modified bag embodiment,

Fig. 4 a section view along the section line IV-IV of Fig. 3, and

Fig. 5 a section illustration similar to Fig. 4 showing a reclosable closure device at the top of the bag in open position.

The gusseted bag illustrated in the drawing is comprised of a flexible, multi-layer, at least two-layer, film that is preferably made from thermoplastic material. The inner layer of the film is fusible and is comprised, for example, of a polyolefin such as polyethylene or polypropylene. One or several layers can adjoin outwardly and, depending on the requirements, respectively, can be a metal foil, for example, aluminum foil, and/or a polyester layer that, in turn, is not fusible but has high strength and excellent printability.

The illustrated bag has a front wall 1 and a congruent rear wall 2 as well as lateral folds 3, 4 inserted between them and extending from a bottom end, not illustrated, to the top end of the bag and ending in this connection at a spacing below the upper edge 5 of the bag walls 1, 2. The bag walls 1, 2 are fused with the gussets 3, 4 as well as with the top area of the bag that is free of gussets along their edges, in particular, by longitudinal fusing seams 6, 7 at the edges. Also, the bottom end is closed by a transverse fusing seam (not illustrated); this can be carried out before or after filling of the bag with the bulk material.

In the area of the top end of the bag there is usually a closure device that is formed by a welding seam that can be provided before or after filling the bag with the bulk material. It can also be comprised of a reclosable closure device that, in the embodiment according to Fig. 1 and Fig. 2, is formed by pressure lock strips embodied like tongue and groove. In detail, this reclosable closure device 8 is comprised of lock strips 9, 10 extending across the width of the bag; one is attached to the front wall 1 of the bag and the other to the rear wall 2 of the bag by fusing or hot sealing. The lock strips 9, 10 support locking members 11 that, when pressure is applied, are transferred into a state

of mutual engagement and, when a pulling force is applied, their mutual engagement is released.

The upper end area 12 of both gussets 3, 4 is folded over along an inwardly and slantedly downwardly extending folding edge 13 wherein folding can be done toward the front wall 1 or toward the rear wall 2. The folded-over end areas 12 of the gussets 3, 4 have the shape of a right triangle and are connected by fusing to the corresponding half of the gussets 3, 4 facing them, as illustrated in Figs. 2, 4, and 5; this is schematically illustrated by welding seam 14. Moreover, the folded-over end areas 12 are fused with their outer side to the neighboring bag wall, in the illustrated embodiment to the rear wall 2 of the bag, as schematically illustrated by the welding seam 15 in Figs. 2, 4, and 5. Moreover, an area 16 of the same-side gusset halves that adjoins the folded-over end areas 12 of the gussets 3, 4 is also areally fused to the neighboring bag wall 2 so that the fused connecting areas include the top edges 17 of the folded-over end areas 12.

In this way, it is ensured that the upper ends of the lateral folds 3, 4 are closed off absolutely tightly independent of whether or not the outer surfaces of the gussets 3, 4 resting against one another are additionally closed off at the top edges 17 by a closure device, for example, an adhesive closure.

In the bag embodiment illustrated in Figs. 3 to 5, a reclosable closure device 18 that is formed as a three-layer lock strip extending across the entire bag width is provided in the top area of the bag. The two outer layers 19, 20 are fused to the inner side of the neighboring bag wall 1 or 2, respectively, as illustrated schematically by the fused connections 21, 22. The central layer 23 is comprised of a resin or plastic material that is permanently adhesive or sticky and can be separated by cohesion fracture into two partial layers when the central layer 23 is exposed to a pulling force by pulling apart the bag walls 1, 2. After removal of bulk material, the two separated partial layers can again be combined to a closed central layer 23 by applying pressure. In other respects, the configuration according to Figs. 3 to 5 corresponds to the bag embodiment of Figs. 1 and 2.